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ABSTRACT

The conditions necessary and the standards of quality to be met for programs leading to the Doctor of Philosophy degree are described in this policy statement. The doctoral program is defined as being designed to prepare a student for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research often leading to careers in social, government, business, and industrial organizations as well as the more traditional careers in university and college teaching. The following requirements for graduate study are discussed: institutional organization, faculty responsibilities, administrative services, and physical facilities. Components of the doctoral program are summarized including the general nature of the program, admission guidelines, guidelines for advising doctoral students, full-time study and residence requirements, examinations, doctoral research and dissertation, and financial aid. Guidelines for establishing new Doctor of Philosophy Degree programs are also presented. (SPG)

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THE DOCTOR OF PHILOSOPHY DEGREE

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A POLICY STATEMENT

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FOREWORD

This statement, to which many individuals have contributed, is intended to describe the conditions necessary and the standards of quality to be met for programs leading to the Doctor of Philosophy degree.

This publication is intended to be useful not only to graduate deans, faculty members, present and prospective graduate students, presidents, and other academic administrative officers, but also to members of university governing boards, governmental and accreditation agencies and officials, private foundations, and those segments of the general public concerned with the quality of the Doctor of Philosophy degree.

What is presented here is endorsed and published by the officers and Executive Committee of the Council of Graduate Schools in the United States.

J. Boyd Page
President

Introduction

The Doctor of Philosophy degree is awarded by universities in many parts of the world as the mark of highest achievement in preparation for active scholarship and research. The general pattern of an academic program leading to the degree is described in this booklet, which was developed as a revision of two earlier statements, "The Doctor of Philosophy Degree" (1964) and "New Doctor of Philosophy Degree Programs" (1965). It sets forth those standards of quality and identifies those procedures which are most likely to lead to successful Doctor of Philosophy degree programs.

The degree of Doctor of Philosophy as awarded today by universities in the United States and Canada is based on procedures that have a long tradition in Western civilization. Soon after the founding of the great universities of Western Europe—in Padua and Bologna, in Paris, and in Oxford and Cambridge—a pattern of four faculties emerged: Philosophy, Theology, Law, and Medicine, and all four awarded doctor's degrees. The degrees now awarded by the last three still maintain much of their original professional significance, but many other fields and disciplines are now included under the aegis of philosophy.

The Doctor of Philosophy degree was first awarded in the United States by Yale University in 1861 for completion of a graduate program in natural philosophy. Programs leading to this degree now encompass many disciplines in the humanities, the physical, biological, and social sciences, and in a few other fields, such as education.

Nature and Purpose of the Doctoral Program

The doctoral program is designed to prepare a student for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research, often leading to careers in social, governmental, business, and industrial organizations as well as the more traditional careers in university and college teaching. The program emphasizes freedom of inquiry and expression and development of the student's capacity to make significant contributions to knowledge. An essential element is the development of the ability to understand and evaluate critically the literature of the field and to apply appropriate principles and procedures to the

recognition, evaluation, interpretation, and understanding of issues and problems at the frontiers of knowledge. All of this is most effectively accomplished in close association with those experienced in research and teaching.

A central purpose of doctoral programs is the extension of knowledge, but this cannot be accomplished on all fronts simultaneously. Students must choose an area in which to specialize or a professor with whom to work. Individualized programs of study are then developed and committee members are selected cooperatively as course work is completed and research undertaken. When all courses have been taken, the research finished, the dissertation written, and all examinations passed, the student will have acquired the knowledge and skills expected of a scholar and will have extended knowledge in the field.

Institutional Organization for Graduate Study

In most institutions graduate programs rest on a broad base of undergraduate programs, and most of the faculty in a given discipline are involved in both. The curriculum for the undergraduate students is generally prescribed by both departmental and college faculties and for each there are required courses. Those of the college are for all students in the college; those of the department for the majors in the field. The student's academic career is the responsibility of the undergraduate dean, who, in cooperation with the department, makes sure that the standards are met and that graduation requirements are completed.

Graduate programs are more generally tailored to the individual student and the discipline. Usually there are no specific courses required by the graduate school; the individual programs are developed cooperatively with an adviser who is a member of the graduate faculty and a committee of graduate faculty members chosen for their knowledge of specialized areas of interest to the student. The committee, including the adviser who serves as chairperson or major professor, usually directs the student until degree requirements have been completed. In some cases committee members for graduate students are recommended by department heads to the graduate dean who officially appoints them. All graduate committees and graduate students are responsible to the graduate dean, regardless of the department, college, or division in which their

program is located. Final determination that degree requirements have been met is the responsibility of the graduate dean.

The graduate faculty is generally responsible for the quality of the graduate programs. This responsibility may be delegated to a committee or council, either elected or appointed, which meets regularly with the graduate dean to advise and assist in a variety of ways with the management and operation of the graduate school. The graduate committee or council may be concerned with policies and procedures covering such subjects as admission of students, quality of coursework available, programs of study, graduate faculty membership, scholarship, fellowships, awards, graduate student committee membership, or any other subject or problem of concern to them and the graduate dean.

Graduate schools with strong programs have several faculty members in each field in which doctoral programs are offered, giving the students the benefit of several points of view and providing sufficient faculty for their supervision, evaluation, and examination. At least four or five professors participate in the doctoral program for the larger and more subdivided fields. The academic interests of the professors generally supplement each other. For instance, in English literature, the areas of old and middle English, sixteenth century literature, modern literature, and linguistics might be represented; or, in physics, they might be atomic physics, nuclear physics, solid state physics, and low temperature physics.

Doctoral programs complement each other at academically strong universities, thus providing stimulation and intellectual strength to the entire academic enterprise. For example, a doctoral program in English literature can be significantly strengthened by the presence of strong doctoral programs in romance languages and literature, the classics, and history. Similarly, a doctoral program in physics can gain strength from active doctoral programs in mathematics, chemistry, and radiation biology, to name only a few.

The programs of doctoral students frequently include work in one or more related or "minor" fields, in order to provide breadth as well as depth of training. To assure that this is achieved, the student's advisory committee may include a professor from each of the minor fields as well as

the student's major professor, and one or more other professors from the major department. One member from outside the department is usually regarded as a representative of the graduate faculty at large. (Further suggestions and recommendations for organizing graduate work in a university may be found in a publication of the Council of Graduate Schools entitled *The Organization of Graduate Study Within the University.*)

Faculty Responsibilities for Graduate Study

The quality of the graduate faculty involved is the most important factor in the establishment of an excellent program leading to the Ph.D. degree. Each professor must aspire to be a creative scholar and an excellent teacher. Usually each has earned the Doctor of Philosophy degree and keeps informed on current activities in a specialty, personally engages in research, and publishes the results regularly through professionally recognized channels. Each teaches and assists students in the doctoral program as classroom teacher, adviser, or major professor, and serves on graduate committees. A major part of the individual faculty member's responsibilities to the institution is that associated with the effort required to direct doctoral students through the four to five years of full-time study necessary to complete the degree. It is not feasible to prescribe a maximum number of students a professor can successfully direct at any one time; the field of study, the individual faculty member, and the quality of the students accepted into the program are limiting factors.

Faculty are also departmental members, and the most important ingredient for departmental success with doctoral students is a strong departmental commitment to graduate study and to the responsibility for graduate students which this entails. Although the training of doctoral students is largely an individual matter for the professors, and the quality of their students is a reflection of their own commitment to excellence, the departmental environment is also a crucial ingredient in the success of a program.

For the faculty to fulfill these responsibilities effectively, there has to be an institutional commitment to high quality graduate work as indicated by the degree to which financial support is provided for research and instructional programs. Competitive salaries, suitable offices, secre-

tarial and technical services, graduate scholarships and assistantships, computer time, and adequate funds for supplies used in teaching and research are some examples of the financial support provided by institutions seriously committed to graduate education.

Administrative Services and Physical Facilities Required for Graduate Programs

Institutions offering graduate work leading to the Ph.D. degree are typically organized into schools, colleges, or divisions, and departments, comprising faculty with a wide variety of scholarly and research interests. Although governing boards are legally responsible for the activities of the institution, they delegate operational responsibility to the chief administrative officer. In turn, the faculty are given responsibility for the nature and functioning of the academic programs, and are administratively responsible to department heads, deans, and the academic officers of central administration. The strength of the institution in graduate education will depend to a large extent on the vigorous and enthusiastic support of this group of administrators.

Such institutions have a variety of facilities and resources essential for supporting and encouraging the academic enterprise:

A. *Libraries and Computers*

An adequate library and library services are indispensable resources for graduate programs. Institutions offering doctoral programs insure that resources are available to the libraries to maintain adequate collections for those fields in which doctoral programs are offered. In addition to their collections, good libraries provide convenient study surroundings, such as carrels, easy access to the stacks, simple check-out and return arrangements, and provisions for long term check-out for the faculty and dissertation students.

At present, large computers and the services available through a computer center are also an indispensable resource for many of the graduate programs. However, computer technology is evolving rapidly, and the major concern of the institution should be to insure that the faculty and students have available the computing capability necessary for research; obsolete administrative arrangements

for research computing and expansion of out-of-date computing facilities should be avoided. In many experiments in the physical and life sciences computers have already become an integral part of the experimental apparatus, and any computer policy must recognize their great utility and flexibility, as well as the changes that have been made in them since they first became available.

B. *Physical Facilities*

A university with strong doctoral programs will have good classroom and seminar facilities, and, in appropriate fields, well-equipped teaching and research laboratories. It will also provide each doctoral student with adequate working facilities, such as desk space or library carrels, laboratory facilities, or field accommodations. Graduate student lounges or "centers" are especially useful in providing opportunities for learning through informal meetings with other graduate students and with faculty.

Some departments have reciprocal arrangements with other universities, industries, or national laboratories, whereby specialized equipment is shared so that professors and graduate students may conduct experiments that would otherwise not be feasible. Inter-library loans and interinstitutional arrangements for graduate students to take on other campuses courses not available on the home campus provide additional ways in which doctoral programs are made more effective.

C. *Auxiliary Facilities*

Graduate students and faculty frequently need access to highly specialized services and skills. Some disciplines require a variety of shops with specialists able to fabricate new devices, modify and adapt existing equipment, and make necessary repairs. Instrument maintenance and repair technicians, skilled photographers, scientific illustrators, and other auxilliary resource personnel contribute significantly to the success of many research programs. Research equipment such as nuclear reactors, sophisticated spectroscopic facilities, and electron microscopes are essential in certain disciplines to enable the faculty and graduate students to address significant problems and make important contributions to knowledge. An interested and competent non-teaching staff, such as maintenance personnel, staff or supporting services and agencies, and particularly the clerical staff, is all-important for the effective and successful conduct of graduate programs. Institutions

committed to doctoral study provide these and other auxiliary facilities and services, as needed by researchers in the various disciplines in which the institution offers doctoral degree programs and in complementary disciplines.

All of the above facilities, services, and personnel not only must be available, they also must be skillfully coordinated and intelligently administered, if the primary goal of graduate study, the development and expansion of knowledge, is to be achieved.

The Doctoral Program

A. *General Nature of the Program*

A doctoral program consists of lectures, seminars, discussions, independent study, and research designed to help the students make significant contributions to knowledge in a reasonable time. During the first year or two of study, doctoral students usually take formal courses and seminars and may begin research shortly after entering the program, although, initially, most of the effort will be devoted to acquiring a working knowledge of the field through study of the literature. In many institutions, after the formal course work has been largely completed, the language and/or other research tool proficiency examinations have been passed, and the comprehensive (qualifying or preliminary) written and oral examinations have been successfully completed, the students are "admitted to candidacy" for the doctoral degree. They then devote essentially full time to completing the dissertation research planned with the adviser, or major professor, and the committee. An oral defense of the research and dissertation by the candidate before the graduate committee and other persons invited to attend constitutes the final examination.

Graduate departments set forth explicit guidelines and procedures for completing degree requirements. Included are departmental requirements beyond those of the graduate school, objectives of the doctoral programs, course and seminar offerings, research specialties offered and the faculty responsible for each, so that the students know and understand their opportunities, duties, and responsibilities.

Programs are usually arranged so that students can complete all requirements in four to five years of full-time study and research beyond the baccalaureate degree. Since

most students are on appointments which require work of some kind for which financial support is provided, the time for them to complete degree requirements may be longer, because full-time study and research are not possible for them.

B. *Admission of Students into a Doctoral Program*

A baccalaureate degree or appropriate undergraduate preparation combined with superior ability, motivation, and dedication to learning are the usual criteria for admission to graduate study. Initial admission to the graduate school may be for a program leading to a master's degree. (For information about this degree refer to the publication of the Council of Graduate Schools entitled *The Master's Degree.*) Completion of this degree or its equivalent, as well as other evidence (undergraduate and graduate grades, scores on the Graduate Record Examinations or similar tests, recommendations of knowledgeable professors, interviews, and work records and references) are used by departmental faculty committees and the graduate dean as a basis for the decision to admit students to doctoral programs. Only those considered capable of completing the doctoral degree are admitted.

C. *Advising Doctoral Students*

A committee of graduate faculty members is usually appointed for each doctoral student; many institutions have found it helpful to do this soon after admission and enrollment. The adviser or major professor serves as chairperson of this committee, the membership of which is determined by the adviser, the advisee, and the department head or a representative of that office, such as the professor responsible for the coordination of graduate study in the department. Usually, three to five professors from the department and at least one from another department or university are asked to serve. They meet with the student and assist in planning the program of course work, seminars, and research that will be followed, and periodically monitor the progress made toward completion of the program of study. They administer the examinations and make decisions about the student's continuation in the program. They also determine when the student is ready to be recommended for the degree.

Some institutions and departments administer an inventory or placement examination to students when they are first admitted to the master's and/or doctoral programs

to determine the extent to which previous educational experiences have prepared the students for advanced study. Courses bearing the same title may vary in content from institution to institution; the inventory examinations are designed to insure that the student is adequately prepared to undertake the advanced work.

D. *Full-time Study and Residence*

Most universities require at least one or two years of continuous residence so that students may concentrate exclusively on course work and research during that period. Opportunities to work closely with the professors and other students and to become totally immersed in the field and its specialties are provided by the residence period. But this is a minimum requirement, and it is generally felt that, to the extent possible, doctoral students should spend their full time in study, research, and teaching in residence at the university. (For a discussion of non-resident degree programs, see the publication of the Council of Graduate Schools entitled *Non-Residential Graduate Degree Programs.)*

E. *Examinations*

A strong doctoral program is designed to insure a relatively early decision on the doctoral aspirant's ability to complete the degree. At many universities comprehensive (qualifying, preliminary, general) examinations (written or oral or both) are given after the student has completed appropriate courses and seminars. Satisfactory performance on the comprehensive examinations indicates that, in the judgment of the faculty, the doctoral student has an adequate knowledge of the field and the specialty, knows how to use their academic resources, and presumably will complete the dissertation.

F. *The Candidate for the Doctorate*

In many institutions formal advancement to degree candidacy occurs after a student has met the criteria established by the graduate school. Research, advanced seminars, and optional courses occupy the student's attention from this point until the dissertation has been written and the final examination has been passed.

G. *The Doctoral Research and Dissertation*

Soon after admission to the doctoral program a student begins to work on research under direction of the adviser or major professor. This first research problem may be one which the adviser feels will be a good introduction to re-

search; however, it ultimately may be used for the dissertation. Final choice of the dissertation topic involves the student, the adviser, the committee members, and often other university committees.

The Ph.D. dissertation fulfills two major purposes: (1) it is an intensive, highly professional training experience, the successful completion of which demonstrates that the candidate can carry out and report on scholarly research at a high level of professional competence, and (2) its results constitute a contribution to knowledge in the field.

The dissertation embodies the analysis and interpretation of the research and the conclusions drawn from it. The format and the technical requirements for the dissertation vary from institution to institution; some may require that it be a published volume. The dissertation is defended in a final oral examination. Practices at doctoral degree granting institutions concerning the conduct of this examination vary; in some cases only the committee members attend; in some, the examination is open to the public. Although considerable flexibility exists in the procedures followed, the end result is that the student, if successful, is recommended by the committee for the degree. However, there is no assurance that having done the course work, seminars, and research the student will be awarded the degree, since the quality of the dissertation and the significance of the contribution to knowledge are important considerations that must be weighed by the committee in making the final recommendation.

H. *Financial Aid*

Students who have the required academic qualifications frequently lack the financial resources needed for doctoral study; so, in order to assure that highly qualified students are able to attend graduate school, institutions provide financial assistance in the form of loans, scholarships, fellowships, and assistantships. *Loans* may be available from university financial aid offices. *Scholarships* and *fellowships* are usually grants which require no service of the recipients. *Assistantships* usually require the students to perform some service for the university, such as aiding professors in teaching classes or conducting research. In return for the service, which may or may not be a stated degree requirement, the assistants are provided stipends and apprentice-like teaching and research experience.

Teaching and research assistants usually register for less than full loads of course work so the time needed for completing degree requirements is extended.

I. *Working Relationships*

There are many ways by which an *esprit de corps* is developed among graduate students and professors. The aim is to provide the extra stimulation and contagious enthusiasm for learning that leads to the "community of scholars" existing on many graduate school campuses. Seminars in which the students present reports on the literature or on their own research, and where professors are free to interact with other professors and graduate students are excellent learning and sharing devices.

Addendum—Establishing New Doctor of Philosophy Degree Programs

The decision to initiate a doctoral program is based on many factors, the most important of which are:

A. There is clear evidence of the potential for a high quality program.
B. The faculty are *already* productive in research and are in full support of the new program.
C. The administration fully understands its responsibilities and is supportive of the new program.
D. Library facilities are adequate for doctoral study in the new program area as well as in supporting areas.
E. Laboratories or comparable facilities are available and adequate for the new program.
F. The faculty offering the new program have already offered master's degree programs of substantial quality.
G. Appropriate officers and procedures for administering the program are established.

When the above conditions prevail, adherance to the following steps will increase the likelihood that the institution will be successful in the establishment of a sound program leading to the Doctor of Philosophy degree:

A. Appoint a departmental committee that will accept responsibility for developing the proposal for the new doctoral program, as follows:
   1. Identify the reasons for offering the new program:

a. What is the local, regional, and national need?
b. How many students will participate?
c. How will the program contribute to the other university departments and to other institutions?

2. Develop a detailed plan for the new program, including goals and objectives, academic procedures, estimated costs to the institution, and a statement of standards to be followed based on those of the Council of Graduate Schools, the regional accrediting associations, the appropriate professional organizations, and practices at other universities granting the Doctor of Philosophy degree.

3. Develop a tentative schedule for establishing the new program.

4. Present the proposal to department head and department faculty to obtain their suggestions and approval.

5. Invite outside consultants to review the proposal, make recommendations, and visit the campus to determine whether the department and the university are ready for the new program. (The Council of Graduate Schools can arrange for such consultation services.)

6. Revise the proposal as suggested by the consultants, and prepare a "final" version for submission to the appropriate authorities.

B. The typical route the proposal follows is:

1. Approval by the school or college curriculum committee.
2. Approval by the graduate committee.
3. Approval by the university curriculum committee.
4. Approval by the faculty government.
5. Approval by the administration and the governing board.
6. Approval by the state agencies, where appropriate.
7. Approval by the regional accrediting association.